

Faculty of Education

Lesson Plan Template

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| **Subject / Course:** Mathematics | **TC Name:** Ms. McKenzie | |
| **Grade Level:** 7 | **Date:** October 20, 2010 | |
| **Topic:** Estimating and Calculating Percents | **Time of Class:** 10:42 am | |
| **AT Name:** Mr. P | **Room # / Location:** RM 209 | |
| **1. Curriculum Expectation(s) and Goal(s) for the Lesson** | |  |
| 1. **Expectations**:  |  | | --- | | 1. Solve problems that involve determining whole number percents, using a variety of tools (e.g. base ten materials, paper and pencil, calculators) 2. Solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools (e.g. concrete materials, drawings, calculators) and strategies (e.g. estimation, algorithms) | | | |
| 1. **Goal(s) for the lesson:**  |  | | --- | | 1. Students will demonstrate how to estimate and calculate percents in “real-life” contexts 2. Students will practice cooperative and communication skills during group work 3. Students will demonstrate sympathy for others in local and worldwide communities | | | |
| **2. Pre-assessment and Accommodations/Modifications** | | |
| |  |  | | --- | --- | | **Pre-assessment:** | **Accommodation/Modification:** | | **Academic Needs:**  **Behavioural/Social/Emotional Needs:**  **Physical Needs:**  **Diversity Needs:** | * Students who finish early may begin to complete their homework (extension of today’s lesson; see Consolidation section below); or I may ask some students to help others who are struggling with the concept * If a significant number of students are struggling with the lesson, I will stop the Minds On activity and review the concepts taught in finer detail, and/or try a different teaching approach. * Certain students exhibit behavioural issues in all of the classes. These names have been noted (i.e. their initials) for each class. Some students struggle with organizational skills and come to class unprepared (e.g. forget agenda, Math notebook, Math textbook, pencil, etc.). Some students are very social/talkative, and a couple of students exhibit a poor attitude. I’ve also noticed many students who assume that they have the implied consent of their peers to use their belongings (e.g. sharpener, calculator) without asking for permission. These issues will have to be addressed in front of the entire class. * None of the students have allergies, hearing or mobility issues. Some students have difficulty seeing text written on the chalkboard; this is mainly due to the position of the chalkboard relative to student desks in the classroom. Students are welcome to temporarily move closer to the chalkboard as they copy notes. * There are no ESL students identified in the class. There are no cultural or language issues identified in the classroom. | | | |

**3. Learning Environment**

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| Students are arranged in groups of four. For the first activity, students will work with a partner (i.e. the student sitting beside them). Then, all of the students will be invited to walk around (called a “gallery walk), in an orderly fashion, to see other students’ designs (Minds On activity). Students will return to the original seats during the lesson, and will work in their groups for the remainder of the class. |

**4. The Overview (Agenda) for your lesson**

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| * Introduction: (Faculty Advisor), Seating Plan (if applicable) * Minds On: Design your own Logo (teams) * All I Want for Christmas is... * Group Activity: Lend a Helping Hand * Ticket Out the Door |

**5. Resources and Materials for your class**

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| * Seven sets of pattern blocks (prepared by me; each bag contains 6 hexagons, 8 trapezoids, 10 rhombuses, 20 triangles ) * Seven Ziploc bags to store pattern blocks * 3 packs of markers (2-3 markers per group) * Calculator * Math textbook (each student has his/her own copy and is expected to bring it to each class) * 7 sheets of chart paper * Minds On activity chart (to be written on chart paper) * 7 copies of the grocery flyers |

**6. Content, Teaching Strategies, for Lesson**

**(NOTE:** All text written in *italics* is teacher’s potential speech)

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| ***Time*** | ***Teaching or***  ***Assessment Strategy*** | **Detailed Description** |
| 7 min  1 min | Minds On: Design your own Logo  Gallery Walk | * Before class, post copy of the activity chart on the chalkboard. Also, place one bag of patterning blocks on each group’s table. * *With your partner, create your own logo/design using 3 hexagons, 4 trapezoids, 5 rhombuses and 10 triangles. Then, each student copy down this chart into your notebook and write down what fraction of the design is blue/red/green/yellow. Express each fraction as a percent and a decimal. Do not ruin your design when you’re finished.* * *I invite you all to get up from your seats and walk around the room to view the designs created by your peers. Please do so by walking around the outside of the desks in an orderly fashion (don’t push each other or run). Once you’ve seen all of the other designs, return to your desk and have a seat. The tallest person in the group please put all of the patterning blocks back into the bag and bring it to the front table.* |
| 10 min  5 min | Instruction: All I Want for Christmas is... | * *Percents, fractions and decimals are used just about everywhere in our lives. We use them when we go grocery shopping, we use them to tell the time (e.g. quarter past 3), and we use them to cook or bake our favourite meals. I’m sure you can think of many other places where we use these values. One of the most common areas in which we apply these values is shopping. Raise your hand if you like to shop? Yeah, I do too! What are some things you like to shop for?* * *Often times, when we go shopping, we see items on sale. And often times, we try to figure out how much we can save if we buy these sale items. In a moment, this classroom will transform into a grocery store containing a variety of foods. But first, we must take a closer look at percents, fractions and decimals.* * *Let’s consider this: I want each of you to think of something you want for Christmas, and estimate the cost of the item. Once you have it in your mind, write it down, along with the cost, in your notebook. During Christmas, there are usually a lot of great deals. Now, close your eyes, and imagine yourself walking into the store and seeing the item that you want on sale; you see a sign that says “40 % off the regular price”. Now, you’ve been saving up to buy this item, but you’re not too sure if you have enough money to buy it. In order to know, you need to figure out the sale price of the item.* * *First of all, if the item is on sale, do we expect the sale price to be greater or less than the original price?* (Anticipated answer: less than the original price). *How might we find the sale price without using a calculator? Let’s take a look at an example.* * Using my item: *For Christmas, since I already have my two front teeth, I would like a new bike. Now, I guessed the price of a new bike would be about $119.99. Since we’re not using a calculator, we’ll have to find an* ***estimate*** *of the sale price. First, to make matters easier, I’ll round the price of the bike to the nearest whole number, which is $120.00. We need to find 40%* ***OF*** *the price; how might we proceed from here?*  **Hint:** *when we use the word “****of****”, as in 40% of a number, the “****of****” tells us that we need to multiply.* (Anticipated answers: Multiply 40% by $120.00) *That is a great suggestion. If you’re really good at mental math, then you can definitely do that. But there is a simpler way.* * *We can start off small with 10% and work our way to 40%. Wondering why? Take a look at this. Multiplying any number by 10% is very easy because all you have to do is move the decimal one place to the left. This will become clearer when you learn how to multiply fractions later in grade 7/ 8. However, it’s important to note that when you multiply a number by a percent, you must first convert the percent to decimal form. So, going back to my bike, $120.00 x 10% = $120.00 x 0.10 = $12.00. So, we have found 10%, or in terms of fractions, one tenth of $120.00; $12.00. How might we use this to find 40%* ***OF*** *the price?* (Anticipated answer: multiply $12.00 by 4). If 10% 🡪 $12.00, then 40% 🡪 $48.00. * *But we’re not quite finished. We still need to find the sale price. How might we find it?* (Anticipated answer: subtract $48.00 from $120.00) Answer: $120.00 - $48.00 = $72.00. *Therefore, the sale price of my bike would be* ***approximately*** *$72.00. What a deal!* * *Now, take out your calculators. How would we find the sale price of the bike using a calculator? Talk with your group members and try to figure out how to find the price. Remember, calculators give us exact results, so there’s no need to estimate this time around. What answer(s) did you get?* Choose students randomly to share their answer. *Did anyone get a different answer?* (Answer: $119.99 x 40% = $119.00 x 0.40 = $71.99) *Here’s a trick: instead of punching two separate calculations into your calculator, you can multiply $119.00 by 0.60, because 100% - 40% = 60%; if the bike is 40%, then we must be paying for the remaining 60% of the cost.* * *Take a few minutes to find the estimated and the exact sale price of your item. Write your answers down in your notebook; show all your work. If you’re stuck, ask someone in your group for help. If you finish early, help someone in your group.* * *Now, I need everyone to close their eyes and put one fist in the air. I’m going to ask you a few questions. If you answer yes, simply open your fist and close it when I tell you to. In order for this to work well, you cannot peak. Open your fist if you could not find any of the prices* (count the number of open fists). *Open your fist if you were able to find one of the prices for your item; i.e. the estimated or the exact price* (count the number of open fists). *Open your fist if you were able to find both prices* (count the number of fists). * *If you are still having some difficulty with these concepts, don’t worry. You’ll will have a chance to practice during the next activity.* |
| 13 min | Application: Lend a Helping Hand | * *Last Monday, many people in Canada celebrated Thanksgiving. Now, I know that not everyone celebrates this holiday, but I can almost say for certain that everyone in here, including myself, is very thankful for having access to food, right? Unfortunately, there are some people in Canada and across the globe that do not have any food. We are so fortunate in Canada because we have a lot of resources.* * *Remember earlier I told you that this classroom was going to transform into a grocery store? Imagine that we are now in a grocery store. Each group will receive a flyer with different foods listed on it. Please do not write on the flyers. Each group will have $20.00 max to spend. You don’t have to spend all of the money, but you must purchase at least four items. Your job will be to work as a group to create a nutritious meal to feed someone who is less fortunate.* * *Criteria: You can purchase any items in the flyer, but you must purchase at least one item from each of the three sections: Meat, Poultry & Seafood; Fruits & Veggies; Side Dishes. Come up with a name for your meal/dish and write it on your chart paper. Also, give a short description of your meal. Each group must list each item, the price of the item as it appears in the flyer, the* ***estimated*** *sale price of each item and the total cost of your purchases (show your work on the chart paper). Be sure to have a reason for each item you choose and write it down on the chart paper (for example, you may choose apples because they’re high in vitamin A). And if time permits, we will share our meals with the entire class. You have most of the remainder of the period to work on this.* * *Right now, choose two people to be the recorders in your group. I am going to ask the tallest person in each group to come up and get a chart paper, markers and a flyer for your group. As soon as your chart paper gets to your table, write the names of all the group members and your class number; I will be collecting the chart papers at the end of the class. So, be productive, creative and have fun! You may talk with your group members, but please keep the noise level down.* * Ask the same person who collected the supplies to bring the supplies to the front table at the end of the activity while the other students copy the homework into their agendas. |
| 3-5 min | Consolidation | * Homework: Find the estimated AND the calculated final price of your Christmas item after taxes (i.e. 13%). Show your work. * Ticket out the Door: What did you understand from today’s lesson? What did you find confusing about the lesson? |